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# BULLETINS AND PAPERS

RELATING TO THE  
INCANDESCENT GAS LIGHTING INDUSTRY

## DECORATED GLASSWARE

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WELSBACH COMPANY

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	<h2>DECORATED GLASSWARE</h2>	
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THE high intensity of the Welsbach light makes it possible to utilize a good proportion of this light in producing decorative effects. The glassware manufacturer was quick to recognize the opportunity and began the development of glassware of various designs combined with artistic and skillfully blended color effects, with the result that decorative illumination has become one of the most important branches of the Gas Lighting Industry.

Foreign glassmakers were the pioneers in the development of decorated glassware, and their globes and shades are in the majority of cases far superior in material, in workmanship and in artistic design to those produced in America. This is due in a great measure to the fact that the principal cost on decorated glassware is for skilled labor. The artists for the production of this class of work are not available in the United States at any price, while in Europe their services may be had at a very reasonable figure. The imported decorated glassware handled by the Welsbach Company has an individuality in that it is all free-hand designing and decoration, and is not of the usual monotonous stencilled design.

**CLASSES.** Innumerable effects in shapes and colors are being produced for decorative uses, but for the purpose of studying the various designs marketed by this Company we can divide them into four well defined classes.

**First.** Solid colored shades and globes such as crystal, opal, ruby, green or yellow. (No. 71 shade; No. 66 globe.)

**Second.** Cased or plated shades, such as green, ruby or yellow outside with an interior plating or casing of opal or crystal. (No. 0571 shade.)

**Third.** Colored etching (as distinguished from painted decorations), where the colored figure stands out in relief on a background of a different colored glass. In this design shade the colored plating is etched or cut away, leaving the decoration stand out in a solid colored glass. (No. 0647 shade.)

**Fourth.** A plain crystal or colored blank with painted decorations. In the more recent developments in painted shades, various forms of matting and icing have been used to assist in the production of beautiful effects. (No. 0687 and No. 0718 shade.)

**SOLID COLORED SHADES AND GLOBES.** Typical examples of this class of glassware will be found in opals, solid yellows and rubies. The Ambrino effect (globe No. 6) is a modification of this style of decoration in which the crystal blank is heavily colored at the top and is generally shaded off to the original blank. The coloring matter, however, is a part of the glass, and is easily distinguishable from the imitation Ambrino produced by painting.

**CASED OR PLATED SHADES OR GLOBES.** A typical example of a cased shade is our No. 101 10-inch green bell top dome. A careful examination of a broken fragment of this dome will show that it is made up of a green layer of glass on the outside and an opal layer on the inside with a layer of clear glass between. This effect is produced by the glass blower first dipping his pipe into a pot of opal glass and then into a pot of clear glass, and finally into a pot of green glass. As the blower works this composite mass into the finished form the separate layers of glass retain their respective positions and the result is obviously a globe or shade made up of layers of different glasses.

A large variety of colored effects may be produced by various combinations of plating, and these are available for harmonizing interior decorations. This style of shade is generally used where it is desired to produce a good reflection below and a subdued illumination in the upper part of the room.

**ETCHED GLOBES AND SHADES.** There are a number of different processes of etching. The cheapest and most common method in use is known as White Acid Etching, which is produced by the action of hydrofluoric acid compounds on the surface of the glass. Where it is desired to produce a figured acid etching, the design is stencilled on the crystal blank and covered over with a substance which prevents the action of the acid on the design. This substance is called a "resist" from the fact that it resists the action of the etching agent. After the acid has acted on the exposed portion of the glass the resist is removed and the glass presents a lustre surface on the protected parts with a frosted background. (No. 1418 and No. 1714 globes.)

A Sand-blast Etching is often used instead of Acid Etching. In this process the surface of the glass is acted upon by a fine, hard sand driven by a blast of air. Where design etching is produced by this method the outlines are covered with a resist particularly chosen to protect the design from the action of the sand.



Needle Etching is very effective as a method of decorating glassware, but this is all hand tool work and is very expensive, and on that account is not generally used.

Nancito Etching is the trade name given to our latest and most artistic style of etched decorated glassware. The Nancito design is made on the colored plate of a cased shade and the etching process is continued until the exposed portion of the colored plate is cut away in such a manner as to leave the figure stand out in relief in its natural color in contrast to the exposed background. In this style of decoration no painted colors are used. The natural surface of a Nancito globe after the resist has been removed is bright and glossy and is usually modified by matting the entire globe or shade after the annealing process which follows the etching. This matting produces a soft, satiny finish and is done by flashing over the surface of the glass with an etching agent.

The finer lines in a Nancito production have to be cut or ground, as it is impossible to get a well defined line by the use of the resist and etching method. This cutting is done by a wheel after the etching process has been completed and the resist removed from the figure. In arriving at the value of a globe careful attention should be given to this point, as the cost of the production depends very largely upon the amount of cutting necessary to produce the fine detail.

The Welsbach Company controls the output of one of the largest producers of this style of decorated glassware in Austria, and the word "Nancito" is our trade name and is applied exclusively to our product.

Under the head of etched decoration another style is produced which presents a smooth outside surface with the design etched out on the inside. (Shade No. 0754.) We use in this shade a colored inside plating with a crystal outside. The etching is done through the colored inside plating in exactly the same manner as exterior etching is done. After the etching operation is completed the entire inside is frequently matted and iced. This produces a globe with a smooth exterior surface with the colored figures and icing showing through. The decorative effect is very striking.

Another modification of this method of decoration is shown by our globe No. 0520, which is a plated shade with figures cut through the outside layer, exposing the color of the interior plating. This is combined with a painted decoration of the exterior surface. The iridescent effect is produced during the firing operation by the introduction of certain volatile chemical agents into the lears. Tin chloride or hydrofluoric acid compounds are usually used to produce these results, and the degree of iridescence is regulated by the manner of applying the agents and the amount used. The fumes of these chemicals have a corrosive action on the surface of the glass which gives it a permanent iridescence.

**PAINTED DECORATIONS.** The early methods for producing this class of decoration were by the use of a hard drier paint. These paints were not permanent and changed color under the action of the light or in some cases might scale or wash off. This was known as the cold decoration process.

The cold process method was soon superseded by the use of paints which could be fired and fused into the glass, thus making a permanent and lasting color. The paints used in this method of decoration must be thoroughly understood, because they usually undergo a marked chemical change during the operation of firing and produce entirely new colors.

In the cheaper shades and globes of this form of decoration the outline of the design is "stencilled" on the surface of the glass and afterwards filled in according to fixed copy. In stencilled decorations the uniformity of the design and the mechanical application of the colors is very apparent, and furthermore, the colors lack the delicate blending which is a conspicuous feature of a hand-decorated shade. The stencilling operation, together with the decoration, is entirely done at the factory where the blank is made, and is done by "bench" artists.

The highest quality of this type of decorated glassware is produced by free-hand artists working from a general model. The workmanship and the character of the color blending depends entirely upon the skill and experience of the artist.

Free-hand decoration is graded according to the elaborateness of the design and the color scheme and the character of the shade desired. The simpler designs and the cheaper shades are decorated by apprentices, while the higher class work is done by the most skilled artists.

Another factor determining the cost of a piece of this type of decorated glassware is the depth of color. In the delicate shades of color the effect is gained by a single application of the painting and firing operation, while in the deeper colors it is necessary to apply the decoration and to fire the shade two or more times. In the very heavy shades of color the painting and firing operation has to be repeated three or four times in order to get the desired effects. This not only adds greatly to the labor cost of the heavily decorated glass, but adds to the cost of the finished product on account of the danger of loss in firing. In the examination of a shade for the purpose of determining its comparative value, it is necessary to give all these points very careful attention.

An additional factor entering into the cost of a shade is the color of the decoration. For example, in rubies, the principal constituent of the paint is gold; in yellows, uranium, etc. These elements on account of their high market value add materially to the cost of the decorations where they are used.

Gold outlines are produced by the use of leaf gold, and the greatest amount of skill and experience is required in the firing of shades bearing this character



of decoration in order to prevent the gold from becoming fused into the glass and losing its lustre.

The raised bead effect noticed on such shades as our No. 0713 is produced by a heavy enamel paint which is fired in the same manner as standard colors.

**STENCILLED DECORATIONS.** Large quantities of cheap imported decorated glassware is produced by the stencil method, and while we do not handle any of this character of decorated glassware, it is of interest to note it in contrast to the method of producing the high grade hand-decorated goods. In stencilled decorations the work is all done at the factory by the artists working at the bench. The consequence of this method of decoration is to produce a monotonous design and carelessly blended colors which are easily distinguishable from the more artistic decoration produced by a free-hand artist.

### GENERAL EFFECTS.

**Matting.** The term "Matted" is applied to the effect produced by etching the surface of the glass by acid or sand-blast and is used to destroy the glossy lustre and give the surface a dull, satiny finish.

**Acid Rough** is acid etching, and is applied more particularly to this finish on small globes, chimneys, etc.

**French Rough** is sand-blast etching applied to the inside of the globe. It has certain advantages from a lighting standpoint, as is shown by our No. 442 globe for use on the "Reflex" light. The coarse sand blasting produces a prismatic effect on the surface of the glass which, while it gives the frosted appearance, does not reduce the candle power of the light.

**Icing** is produced by sprinkling small particles of a low fusing point glass on the surface of the portion to be iced and firing the entire piece of glassware until the small fragments melt and fuse into the main body of the glass. The icing appears in the form of small beads.

**Iced Matt** is made by icing a matted surface and is one of the most popular and effective decorative methods used on recent imported glassware. Numerous effects are produced by various methods of applying the icing and matting, and typical examples may be noted in our line of shades No. 0711, No. 0715, and No. 0721.

An explanation of the cost of a shade may be arrived at by a careful examination to see how many of these general operations have been employed to produce the effect.

**HAND DECORATION.** The method by which our imported decorated glassware is made will be of interest.

The blanks are made at our Austrian factories and are shipped to a distributing station located in the Bohemian Mountains. From these they are

delivered to the artists whose homes are in the mountains surrounding the town of Haida. The blanks are transported from the distributing station to the homes of the artists by the women of the family who go to the station with large square baskets strapped on their backs. These baskets are filled with the blanks and are carried on the backs of the women to their mountain home. Each shade is supplied with a sketch showing the design to be executed by the artist.

The work in the artist's home is sub-divided—the higher class work is done by the best artist in the family and the cheaper and simpler designs are executed by the younger and less experienced members. The designs are transferred to the shades by a free-hand sketch, and the color effects are worked out with the greatest care and detail. It is necessary for each artist to have an exact knowledge of the constitution of the paints he is using in order that the desired color effects may be produced in the finished article, as the colors of the paints as applied by the brush are entirely different from those resulting from the firing process, and due allowance has to be made for the color changes which will take place in the kiln.

In some cases each artist has his own kiln for firing the decorated glassware; in other cases a number of artists living together own a co-operative kiln.

After the shades are decorated and fired the perfect ones are replaced in the square baskets and carried by the women of the family back to the station, where they are carefully packed for shipment to America.

The artists are paid for this work by the piece, and the rate is based upon the intricacy of the design, the size and character of the decoration and the number of paintings and firings required to produce the proper depth of color. The paints are furnished to the artist by the manufacturer.

The individuality of the hand decorated shade is a marked characteristic, and the artists who produce this high class work could not be induced to go into the factories and work at the bench. They claim that they require the beautiful surroundings of their mountain homes to inspire them to more artistic work.

The hand decorated shades cannot be produced in America as cheaply as the imported shades because we do not have the number of artists necessary to carry out the large amount of work required to meet the market on this class of glassware. Furthermore, artists in this country qualified to handle this kind of work command a very high price for their services. Practically all of the decorated shades produced in America are factory products, and the free-hand home decoration which characterizes our entire line of shades of this type are not supplied except in the imported article.

